

### **REMARKS**

The Final Office Action dated June 25, 2004 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Claims 1-23 are pending in the present application. Claims 1, 5, 12-13 and 20 are independent claims. Claims 1, 5, 12-13 and 20 have been amended to more particularly point out and distinctly claim the present invention. Support for the subject matter added to claims 1, 5, 12-13, and 20 may be found throughout the specification and figures of the present application. No new matter has been added. Claims 1-23 are respectfully submitted for consideration.

#### **Rejection of Claims 1-23 under 35 U.S.C. § 103(a):**

Claims 1-23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,701,292 to Chiussi et al. (Chiussi '292) in view of U.S. Patent No. 5,914,936 to Hatono et al. (Hatono '936) and U.S. Patent No. 5,719,853 to Ikeda (Ikeda '853). In the Office Action, it was acknowledged that Chiussi '292 fails to disclose disabling a data flow and re-enabling the data flow upon satisfying a spatial requirement and a temporal requirement. However, it was alleged in the Office Action that Ikeda '853 and Hatono '936 may be combined with Chiussi '292 to yield the claimed invention. Applicant respectfully submits that claims 1-23 of the present application recite subject matter which is neither disclosed nor suggested in the cited prior art.

Claim 1, upon which claims 2-4 depend, recites a method for controlling data flow inside a network switch. The method includes determining if a quantity of queued data for a port, of a plurality of ports of the network switch, has exceeded a first predetermined threshold. The method also includes disabling, within the network switch, a data flow to the port from other ports of the plurality of ports if the quantity of queued data is determined to have exceeded the first predetermined thresholds. The method also includes re-enabling the data flow to the port from the other ports of the plurality of ports when the port satisfies a predetermined spatial requirement and a predetermined temporal requirement.

Claim 5, upon which claims 6-11 depend, recites a method for controlling data flow in a network switch. The method includes defining a preferred operational range for a port, of a plurality of ports of the network switch, defining a quasi-congested operational range for the port, and defining a congested operational range for the port. The method also includes disabling, within the network switch, a data flow to the port from other ports of the plurality of ports when the port approaches the congested operational range. In addition, the method includes re-enabling the port for receipt of data from other ports of the plurality of ports when the port reaches the preferred operational range and satisfies a predetermined temporal requirement.

Claim 12 recites a method for controlling data flow in a network switch. The method includes monitoring a quantity of data queued to be transmitted by a port of a plurality of ports of the network switch, determining if the quantity of data queued has

exceeded a high water mark, and disabling, within the network switch, a data flow into a port queue from other ports of the plurality of ports if the quantity of data queued is determined to have exceeded the high water mark. The method also includes determining if the quantity of data queued has fallen below a low water mark, and determining if a predetermined amount of time has passed, if the quantity of data queued has fallen below the low water mark. The method further includes re-enabling data flow into the queue from the other ports of the plurality of ports, if it is determined that the quantity of data has fallen below the low water mark and the predetermined amount of time has passed.

Claim 13, upon which claims 14-19 depend, recites an apparatus for controlling data flow in a network switch. The apparatus includes means for determining if a quantity of queued data for a port, of a plurality of ports of the network switch, has exceeded a first predetermined threshold. The apparatus also includes means for disabling, within the network switch, a data flow to the port from other ports of the plurality of ports if the quantity of queued data is determined to have exceeded the first predetermined threshold. The apparatus further includes means for re-enabling the data flow to the port from the other ports of the plurality ports when the port satisfies a predetermined spatial requirement and a predetermined temporal requirement.

Claim 20, upon which claims 21-23 depend, recites a network switch that includes at least one data port interface connected to at least one port, in communication with a plurality of port interfaces of the network switch, and at least one queue in connection with the at least one data port interface for receiving data transmitted to the at least one

data port interface from the plurality of port interfaces. The network switch also includes a memory management unit in connection with the at least one queue. The memory management unit disables , within the network switch, a data flow to a queue from the plurality of port interfaces when a level of data in the queue reaches a predetermined threshold, and thereafter re-enables data flow to the queue from the plurality of port interfaces when the level of data in the queue reaches a second predetermined threshold and a predetermined amount of time has passed.

As discussed in the present specification, certain embodiments of the claimed invention provide for temporal and/or spatially based flow control to remedy overcrowding at a particular egress port. Chiussi '292, Hatono '936, and Ikeda '853, taken either individually or in combination, fail to disclose or suggest the elements of any of the presently pending claims. Therefore, Applicant respectfully submits that these references fail to provide the advantages discussed above.

Chiussi '292 discloses that “[t]o prevent overload, switch 1 . . . must adjust the data transfer rates of the data sources” (column 3, lines 48-50). Chiussi '292 also discloses that “each data source . . . periodically sends an electronic code or [resource management] RM cell to the switch 1” (column 3, lines 50-52). Chiussi '292 further discloses that “the RM cell contains data transfer rate information which instructs the data source to either increase or decrease its data transfer rate by a specific amount or instructs the data source to operate at a specific data transfer rate” (column 3, lines 61-65).

However, Chiussi '292 fails to disclose or suggest at least "disabling, within the network switch, a data flow to the port from other ports of the plurality of ports", as recited in claims 1, 5, and 12 of the present application. Chiussi '292 also fails to disclose or suggest at least "means for disabling within the network switch, a data flow to the port from other ports of the plurality of ports", as recited in claim 13. Chiussi '292 further fails to disclose or suggest at least that "the memory management unit disables, within the network switch, a data flow to a queue", as recited in claim 20 of the present application.

Hatono '936 discloses "an ATM exchange which judges whether the congestion of cells occurred within a buffer in the ATM exchange is light congestion . . . or heavy congestion . . . and furthermore, controls the amount of traffic adaptively according to the seriousness of the congestion" (column 3, lines 9-15). Hatono '936 also discloses that when "[t]he ATM exchange judges that heavy congestion is occurring...[it] performs feedback control of the terminals connected thereto" (column 4, lines 35-39) In addition, Hatono '936 also discloses that a "timer is provided, which is activated when the queue lengths of cells in the buffer queue exceed the first threshold, and cleared to zero when the queue lengths recover the second threshold or lower" (column 4, lines 25-28). However, Hatono '936 fails to address or eliminate any of the above-discussed shortcomings of Chiussi '292.

Ikeda '853 discloses "a congestion control method capable of preventing any ATM cell from being lost due to buffer overflow in a node and of achieving high

availability of the ATM network” (column 2, lines 12-15). Ikeda ‘853 also discloses that “[w]hen the queue length of a node is a second threshold or more which is greater than the first threshold, there is halted the transmission of data cells from the preceding nodes or source terminals to the bottleneck node” (Abstract, lines 4-7). However, Ikeda ‘853 fails to address or eliminate any of the above-discussed shortcomings of Chiussi ‘292.

As discussed above, claims 1-23 of the present application recites methods and devices for disabling a data flow “within the network switch”. In direct contrast, Chiussi ‘292 discloses a use of electronic codes of RM cells between switch and data sources that are outside of the switch. Since Ikeda ‘853 and Hatono ‘936 also each fail to disclose or suggest either methods or devices that disable a data flow “within the network switch”, Chiussi ‘292, Hatono ‘936 and Ikeda ‘853, taken either individually or in combination, fail to disclose or suggest the subject matter recited in claims 1-23 of the present application. At least for these reasons, Applicant respectfully submits that claims 1-23 are patentable over Chiussi ‘292, Hatono ‘936, and Ikeda ‘853. Therefore, reconsideration and withdrawal of the rejection of claims 1-23 under 35 U.S.C. § 103(a) as being unpatentable over Chiussi ‘292 in view of Hatono ‘936 and Ikeda ‘853 is respectfully requested.

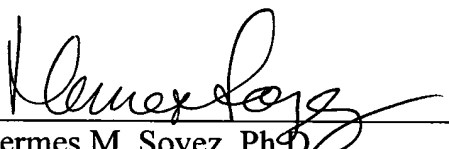
Applicant respectfully submits that all of the comments included in the Office Action have been addressed and that the rejection included in the Office Action has been overcome. At least in view of the above, claims 1-23 of the present application contain

allowable subject matter. Therefore, it is respectfully requested that all claims pending in the present application be allowed and that this application be passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the Applicant's undersigned representative at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

  
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